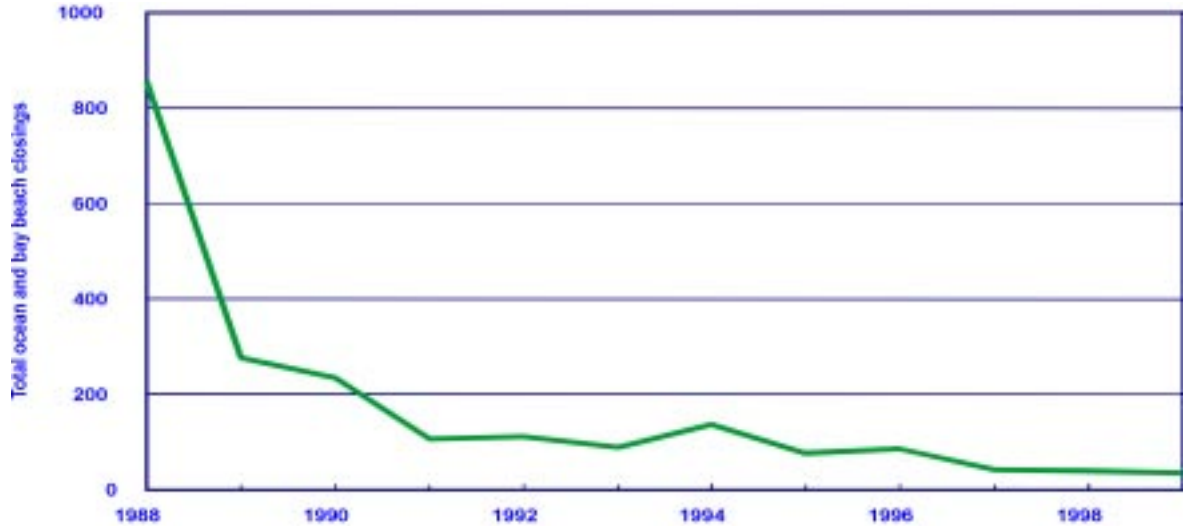


INDICATOR
36

Beach Closings: Ocean and Bay

Number of times per year a New Jersey beach has been closed to the public due to unhealthful conditions:
 Decreasing



Importance

Millions of people visit our beaches every year. The Jersey Shore is a key element of quality of life in our state and a major tourist draw that contributes significantly to the state economy. Generally, beach closings are caused by nonpoint source pollution, typically due to runoff from streets and lawns. Less frequently, failures in sewage collection and treatment systems occur and may result in beach closings.

Economic

Beach closings are highly visible events that can drive away potential visitors and reduce the large revenues that are otherwise generated by coastal tourism. They tarnish the general reputation of our state, hurting our chances to attract new jobs and businesses.

Environmental

Extended beach closings represent serious incidents of pollution mainly due to elevated levels of fecal coliform from wildlife and

stormwater runoff. Beaches are closed when conditions are detected that may be unhealthful for humans. No closings have been attributable to floating debris since 1990.

Social

Many families have gone to the beach every summer for generations. The beach provides recreation for people of all ages. Beach closings ruin this pastime and limit our options for summer outings. Trips to the shore are an important part of New Jersey's quality of life.

Things to think about

- Through great efforts in controlling pollution, especially sewage-related discharges, ocean and bay beach closings have been dramatically reduced.
- New Jersey not only has fewer beach closings than other shoreline states, but also achieves this with higher standards and more comprehensive monitoring than most.
- People once believed incorrectly that the ocean was so vast that it could absorb any amount of pollution.
- Our beaches continue to face new threats from off our shores and we need to be diligent about protecting our coastal waters.

Knowledge gaps

Pollution levels may be just short of the level at which a closing is required for many days a year, but that would not show up in this indicator. Although the monitoring performed for recreational bathing is very comprehensive, it does not include all contaminants. Ecosystems can be affected by lower levels of pollution and by factors that are not threats to human health.

Note: See the Technical Appendix for a change in the description of this indicator since the 1999 Sustainable State Project Report.

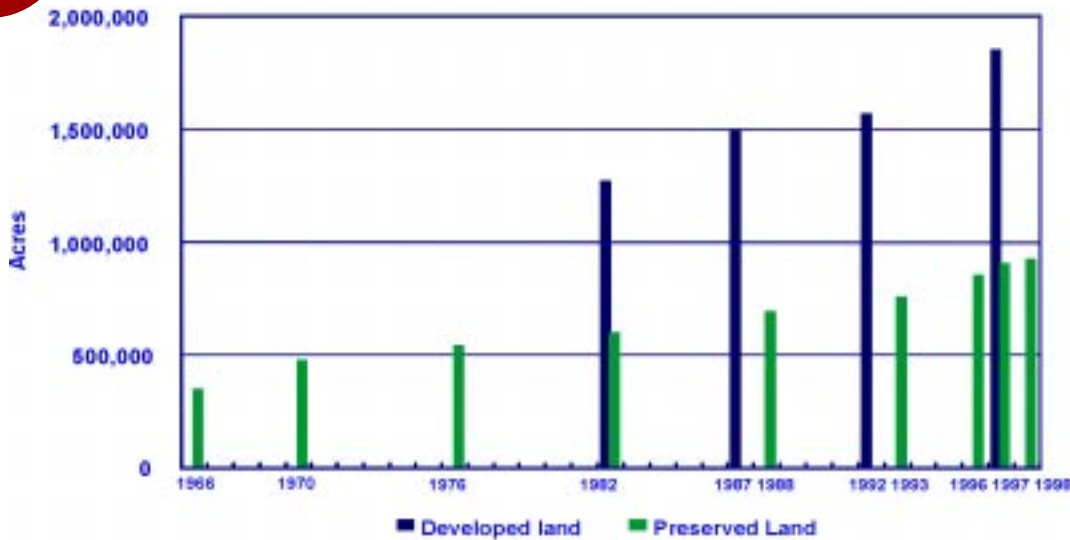
DATA SOURCE: NJ DEPARTMENT OF ENVIRONMENTAL PROTECTION

INDICATOR

37

Preserved and Developed Land

Cumulative number of acres preserved or developed:
Both increasing



Importance

Once land has been built upon, it is very difficult to return it to its natural state. At the same time that developed land is increasing, the acres of land preserved from development have also increased. This struggle to preserve what is left has been described as the “open space race.” The way we develop our remaining land, whether we practice “smart growth” or continue the current sprawl trend, will impact every aspect of life in New Jersey, from air and water pollution to wildlife, economic prosperity, recreation, urban renewal, and taxes.

Economic

Open space, and the quality of life it provides, is a critical asset as we

compete internationally to attract businesses and jobs. Economic studies have shown that property values increase when in proximity to well-maintained public open space. Higher property values translate into higher tax revenues, allowing municipalities to prosper. The quality of life that comes with proximity to open space is emerging as a major factor in the competition for new businesses and jobs.

Environmental

Land is our most precious natural resource. Poorly planned roads, parking lots, houses, and malls strain our ground water supplies, the cleanliness of our air, and our ability to escape from traffic and noise. While all new roads and

development can have these impacts, good planning and land preservation can ameliorate some of the concerns. Land preservation offers a refuge for people, cleans our air and water for free, and provides habitat for a wealth of species.

Social

How do you value a place where a child has room to throw a ball or to fly a kite? One way is to look at the change that occurs in a neighborhood that has a new park. Crime fell in one Philadelphia precinct by 90 percent after the police helped the neighborhood clean up vacant lots and plant gardens. Parks not only give children a place to play but adults a place in which to invest their pride.

Things to think about

- New Jersey has received national attention for its land preservation agenda.
- In 1998, New Jersey voters overwhelmingly passed a referendum to spend \$98 million per year for the next ten years to preserve one million acres of the state’s remaining open space and farmland.
- As our population grows and undeveloped land becomes more scarce and more expensive, it becomes increasingly difficult to preserve open space for future generations. They may place a higher value on preserving open space than we do, but their options for preservation will be fewer than ours. Less land will be available, so the prices they will have to pay will be higher.

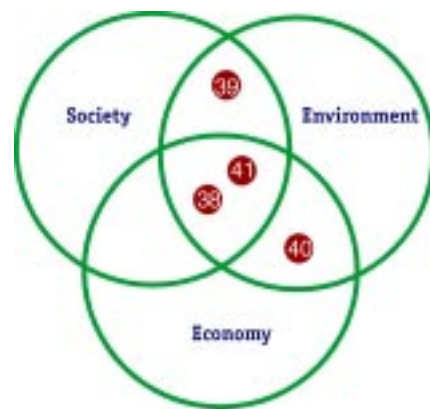
Knowledge gaps

This indicator does not tell us about the ecological richness and value of the land that is preserved. We also cannot see whether we have preserved a full cross-section of New Jersey’s native habitats and ecosystems.

Minimal Pollution and Waste

GOAL: Minimize the generation and accumulation of pollution and waste; maximize the use of efficient, clean and sustainable energy sources; and increase consumer choices for ecologically friendly products.

The name “New Jersey” once connoted pollution in people’s minds. We’ve made progress. New Jersey once had among the most polluted beaches in the country; we now have some of the cleanest. Our most innovative companies have proven that pollution prevention is often inexpensive and can improve the efficiency of our economy. New Jersey still has more federally designated “Superfund” waste sites than any other state. Pollution has driven investment away from our inner cities and has contributed to illness and rising health care costs throughout the state.



What we know

38	New Jersey’s greenhouse gas releases recently increasing	page 61
39	Drinking water quality shows little change	page 62
40	Total solid waste production recently leveling off	page 63
41	Air pollution decreasing	page 64

What we don’t know

- The actual costs in health care, clean-up, and lost resources that we pay due to pollution.
- Although we know how many pounds of hazardous chemicals are emitted every year, we do not know the actual health risks that they cause or whether that health risk is increasing or decreasing.
- How much of the global warming problem is due to our activities and how much we need to change.
- How much business and government could save in operating costs by reducing pollution and waste.

Greenhouse Gas Releases

Millions of tons of greenhouse gases released into the atmosphere annually (expressed as carbon dioxide equivalent weight): Recently increasing



Importance

Global warming is considered by many to be one of the most significant environmental threats to the future of modern civilization. Most of it is caused when gases released by human activities, particularly burning oil, coal, and gas, accumulate in the atmosphere and trap the sun's heat - much the way the glass of a greenhouse traps heat. Most climate scientists believe that as a result of this warming of the earth, sea levels are going to rise; weather patterns will shift; hurricanes, tropical pests, and diseases will travel farther north; and differing rainfalls will alter crop patterns. We in New Jersey are participants in changing the climate of our state and of our world.

Economic

Unchecked climate change could impose serious burdens on our economy. A rise in sea level that inundates the shore could cause billions of dollars in property damage. Changing rainfall patterns could cause major crop losses and affect future drinking water supplies. New Jersey could become more vulnerable to hurricanes, floods, new pests, and diseases migrating north from tropical places. Reducing greenhouse gas (GHG) emissions before the full effects are felt presents economic challenges and opportunities.

Environmental

If some predictions are correct, global warming could trigger a wave of massive environmental transformations, causing whole ecosystems to

radically change in an attempt to adapt to new conditions. This will lead to invasions of exotic species that will displace native wildlife and become carriers of new diseases. Species extinction may result and entire habitats could disappear forever. The full consequences of such upheaval are unknown.

Social

It is only through cooperation, from the local to the international level, that we can address this problem. The United States is the largest greenhouse gas emitter in the world. Other countries have begun to express significant anger toward our country because our emissions cause problems with which they will have to deal.

Things to think about

- New Jersey represents approximately 0.1 percent of the world's population, yet generates approximately 0.5 percent of the world's GHG emissions.
- The longer we wait to act to address global warming, the more difficult and costly it will be. Prevention, as always, is the least expensive solution.
- There are a number of near term and very cost effective options for minimizing and controlling GHG emissions. Examples include cars that get more miles per gallon and compact fluorescent light bulbs that save electricity, which are available now to help us save energy.
- The majority of land in our state is not very high above sea level. Most of South Jersey is low-lying coastal plain.
- Since we can now purchase our electricity in the same way we purchase phone service, one of the most important things we can do as individuals is buy "green" power - that is, the electricity generated from renewable sources and sources with the lowest environmental impacts.

TARGET

(from NJDEP Administrative Order 1998-09, 1998 NJDEP Strategic Plan, NEPPS FY 99/00 Performance Partnership Agreement, NJ Sustainability Greenhouse Gas Action Plan):

By 2005, reduce GHG emission levels to 3.5% below 1990 levels
(Baseline = 136 million tons of carbon dioxide equivalents in 1990)
1997 level: 155 million tons

Knowledge gaps

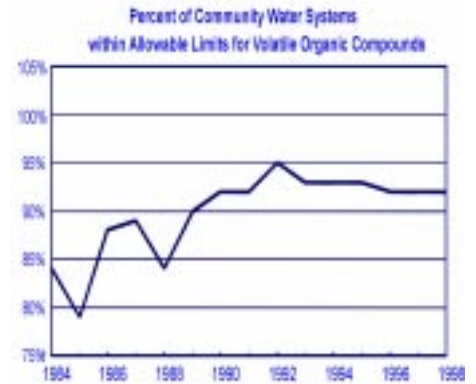
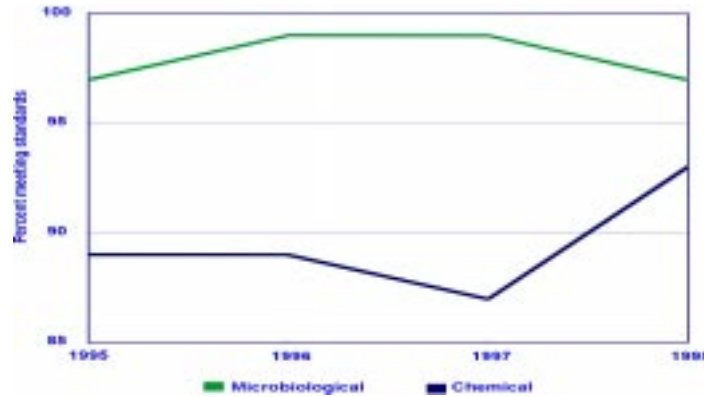
A large majority of scientists believe that global warming and climate change is happening. However, we do not know how serious the effects may be or what reductions in greenhouse emissions are necessary to prevent global warming. These data are only estimates and will vary from actual emissions.

INDICATOR

39

Drinking Water Quality

The percent of community drinking water systems with no violations of any microbiological and chemical contaminants: Little change



Importance

In New Jersey we are blessed with abundant water supplies and drinking water systems that protect us from many of the chemicals, radiological contaminants, bacteria, viruses, and parasites that affect the health of people in many other parts of the world. However, regular testing of drinking water is necessary to protect the safety of our water supplies. This indicator tells us what percent of our community water supplies met all drinking water safety standards. Since 1995, the number of community water systems that met all safety standards has remained between 97 and 99 percent for microbiological standards and between 87 and 93 percent for chemical standards. The number of community water systems testing within allowable limits for volatile

organic compounds has increased from a low of 78 percent in 1985 to 92 percent in 1998. Sources of contamination in drinking water supplies are industrial pollution of groundwater, urban and agricultural runoff, and industrial discharges into surface water supplies.

Economic

In communities with poor water quality, property values fall and economic potential declines. The most cost-effective way to avoid these losses is through prevention of pollution. Once a water supply is contaminated, treatment costs can easily run into the millions of dollars. Paying for these treatment costs can be especially difficult for communities with small water systems.

Environmental

Water supplies that do not meet safety standards for people may also contain chemicals that can harm ecosystems and sensitive wildlife such as frogs, whose populations have declined substantially in recent years. Clean water and a pollution-free environment are as vital to our ecosystems as they are to our health.

Social

A safe and stable water supply is a foundation for any civilization and is important to New Jersey's communities. Residents of many New Jersey towns have concerns about the health of their water systems and are seeking new ways to learn about the quality of their drinking water. Access to a healthy water supply is essential to the well-being of our communities.

Things to think about

- Access to potable water is the single biggest public health issue in the world.
- Bottled water often costs more per gallon than gasoline or milk.
- Drinking water is not regularly tested for all possible contaminants. Approximately 90 microbiological, radiological, and chemical contaminants are monitored in New Jersey's drinking water supplies.
- Treatment processes have become more rigorous, due in part to the fact that more chemicals and contaminants are now regulated than ever before.

TARGET

(from NEPPS FY99/00 Performance Partnership Agreement):

By 2005, 95% of the public water systems will provide water that meets the microbiological and chemical drinking water standards.

(NOTE: target is being met for microbiological standards for community water systems):

Current level (microbiological): 97%
Current level (chemical): 93%

Knowledge gaps

The contaminants measured here are only a portion of the known drinking water contaminants suspected to be detrimental to human health. Research is currently underway to identify additional contaminants of importance in drinking water supplies. The data do not include the test results from more than 4,000 non-community water systems in New Jersey. Noncommunity water systems do not serve permanent residents and include office buildings and highway rest stops.

Note: In the 1999 Sustainable State Project Report, the primary graph for this indicator showed the percentage of water systems testing for volatile organic compounds (17 contaminants) that met the drinking water standards. It is shown here as a secondary indicator. In this report, the primary graph shows compliance with all chemical and microbiological standards for drinking water.

INDICATOR

40

Total Solid Waste Production

Pounds of solid waste generated annually, per New Jersey resident: Recently leveling off



Importance

New Jerseyans generate about two tons of garbage per person every year. Throughout the United States, we produce nearly twice as much waste per citizen as any other country in the world. This is a costly situation. We pay to buy unneeded materials such as packaging, and pay again to dispose of them. Recycling helps, yet is still more expensive in cost and resources than using less in the first place. The adage “reduce, reuse, recycle” is even more relevant and necessary today than ever.

Economic

Waste is a misplaced resource. Disposing of waste is an economic burden and an expensive part of local services. The most successful firms and economies in the world are usually those with the most efficient manufacturing processes. True efficiency means wasting little and avoiding purchase of costly materials and energy in the first place.

Environmental

We dispose of our waste by burying it in landfills or burning it in incinerators. This can result in groundwater pollution, poor air quality, and many other forms of environmental degradation. Such damage frequently pales in

comparison to the damage we do in removing these materials from nature in the first place.

Social

Political and social battles over where to locate and how to pay for waste disposal facilities have become contentious and threaten to split our state along racial, economic, and geographic lines. Concerns include odor, the traffic of heavy trucks, and the potential health risks of pollution from incinerators and landfills. Anecdotal evidence indicates that poor and minority communities may receive more than their fair share of these facilities.

Things to think about

- With better technologies and knowledge of environmental issues, we could easily have reduced the amount of waste we produced during the 1980s and 1990s. But instead, since 1985 each of us has on average increased our waste by more than 1,000 pounds.
- Our increase in waste generation was until recently somewhat offset by dramatic increases in recycling, but this is not a complete solution and the state’s ultimate goal is to reduce the size of the total waste stream. This is called “source reduction.”



TARGET

For Recycling Rate

(from 1998 NJDEP Strategic Plan & NEPPS FY99/00 Performance Partnership Agreement):

By the end of the year 2000, achieve and maintain recycling rates of 65% of the total solid waste stream (and 50% of the municipal waste stream).

Current level (1998): 56% of the total solid waste stream recycled.

Knowledge gaps

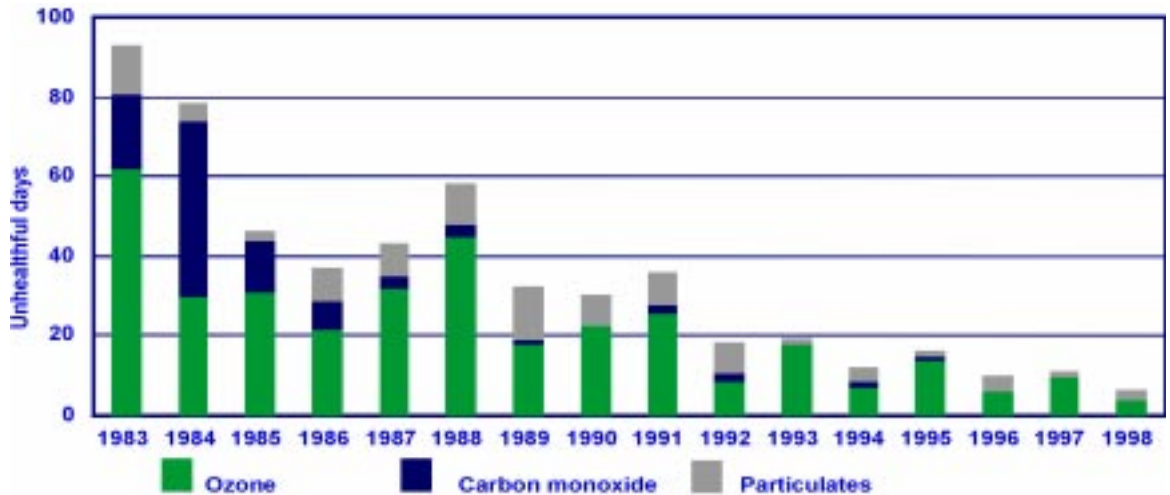
This indicator does not reveal the composition of our trash. Since some materials, such as batteries, are more of a problem than others, it is important to know this. We also do not know how much damage was caused bringing these materials to New Jersey. In order to understand the true cost of the waste we produce, we need to do “life cycle analyses,” where we track the materials we use from extraction through production to disposal or re-use. Such information is mostly unavailable.

INDICATOR

41

Air Pollution

Number of unhealthful days annually caused by ground-level ozone, particulate matter, and carbon monoxide: Decreasing



Importance

Clean air to breathe is one of life's absolute necessities. Although New Jersey's air quality has improved significantly, it is still considered among the worst in the country for ground-level ozone. Ground-level ozone is the main component of smog, a chronic air quality problem with serious health effects in our state. "Particulate matter" (PM) are tiny particles of pollution that can lodge in people's lungs and create respiratory problems. Carbon monoxide is a hazardous substance (deadly at high concentrations) produced when fossil fuels are burned for energy and especially when gasoline is burned in cars.

Economic

We pay for poor air quality in many ways. We pay to treat the illnesses it

causes. Absenteeism caused by air pollution impacts school children and workers. Neighborhoods lose as property values fall in places where the air is bad. Workers and businesses lose when limits are imposed on new development because federal air quality standards are not met. Businesses lose also if shoppers and tourists are warned to stay indoors because of poor air quality. Air pollution can also have other economic effects such as crop damage or degradation of art, statues, buildings, and other materials.

Environmental

Poor air quality is a generally recognized public health threat. It is linked to significant long- and short-term health problems. These can include an increased incidence of asthma attacks, heart disease, and cancer risk. Air

pollution can be detrimental to wildlife and ecosystems in the same way. In addition, contaminants can work their way up the food chain in ever-higher concentrations and interfere with natural systems. We have a good understanding that many of the factors increasing air pollution, such as cars traveling on new roads and development, also have severe impacts on ecosystems due to habitat loss.

Social

Severe air quality problems force people to stay indoors, preventing recreation and social activities. Some forms of air pollution also cause a loss of visibility or can cause unpleasant odors that undermine our quality of life. Air pollution can be concentrated in low-income and minority areas and, if so, represents an inequity in our society.

Things to think about

- A significant portion of New Jersey's air pollution is emitted in other states and blows into our state. Changes in those out-of-state emissions are not within the direct control of our citizens or our state government. However, New Jersey has been a leader in trying to coordinate regional air pollution control efforts.
- Ozone levels are strongly affected by weather conditions. Hot, sunny, windless days tend to exacerbate the ozone problem. The relatively cool summer of 1998 kept ozone levels down, as reflected in the infrequent number of days where ozone levels exceeded the health standard. This does not, however, necessarily indicate that the presence of air pollutants declined in 1998.

Knowledge gaps

These data, based on the number of days health standards were exceeded, do not take into account changing air quality standards for particulates and ozone. This indicator does not measure all problem air pollutants.

TARGETS:

(From 1998 NJDEP Strategic Plan & NEPPS FY99/00 Performance Partnership Agreement)

- * By 2007, attain the 1 and 8 hour standards for ozone statewide.
- * By 2007, maintain current attainment for PM10 – inhalable particulate matter – and attain the standard for PM2.5 – fine particulate matter.

GLOSSARY

Abbott Districts: The New Jersey Supreme Court ordered that educational funding for 30 poor urban districts must be assured at the level of the property-rich districts; that such funding could not depend on the ability of local school districts to tax but must instead be guaranteed by the State; and that the level of funding must also provide for their special educational needs to achieve the constitutionally required thorough and efficient education.

Agenda 21: The non-binding agreement signed by world nations at the 1992 United Nations Conference on Environment and Development (see Earth Summit). Agenda 21 sets out conditions and recommendations for achieving global sustainability.

Benchmark: A quantitative reference point that will be officially adopted through the Sustainable State public process for each indicator, which will operationalize the goal and against which indicators can be compared in any given year. Often confused with Indicator and Target.

Biodiversity: The variety of living organisms in an Ecosystem. (See also Diversity.)

Brundtland Commission: Officially, the World Commission on Environment and Development, chartered by the United Nations and chaired by Norwegian Prime Minister Gro Harlem Brundtland. From 1984-87 it studied global environmental, economic, and social trends, and published its recommendations in the 1987 report *Our Common Future*, which set a global agenda for sustainability.

BTU: “British Thermal Unit,” a measure of energy. Specifically, one BTU is the amount of energy required to raise the temperature of one pound of water one degree Fahrenheit. One BTU = 0.293 watt hours = 1054 joules.

Community Water System: A water system that regularly serves at least 15 service connections or 25 year-round residents. Examples of community water systems include cities, towns, and mobile home parks.

Culture: An integrated pattern of human beliefs, values, behaviors, and institutions shared by a distinct group, the inhabitants of a region, or the citizens of a nation. Used in some contexts as a synonym for the arts and other forms of social expression.

Development: “To evolve the possibilities of” (Webster’s New Collegiate Dictionary). A process of growth or change. Often used in the phrases “economic development,” connoting an expansion of economic opportunities and jobs, and “sustainable development,” referring to economic and social changes that promote human prosperity and quality of life without causing ecological or social damage. Sometimes confused with Growth.

Diversity: Difference and variety. Diversity is an essential component of sustainable cultural, ecological, and economic systems because it makes them more resilient and adaptable to changes.

Earth Summit: The United Nations Conference on Environment and Development, or UNCED (the “Earth Summit”) held in Rio de Janeiro, Brazil in 1992. The Earth Summit was the largest gathering of heads of state in world history.

Economic Development: See Development.

Economy: Originally, the “management of a household.” More commonly today, the system of production, distribution, and consumption of goods and services in the larger scale.

Ecosystem: An ecological system, a natural unit of living and nonliving components that interact to form a system in which a cyclic interchange of materials takes place between living and nonliving units. (from *Dictionary of Biology*, Edwin Steen)

Efficiency: The most standard definition is the ratio of effective or useful output to the total input of any system, whether this is the energy delivered to run a machine or the natural resources consumed to produce products. Economists have taken a different tack and define “efficiency” as socially optimal resource allocation.

Endangered Species: Species whose populations and habitat have declined to the point where extinction is imminent, requiring significant human intervention to protect habitat to preserve them (as defined by the Endangered Species Act). (See also Species.)

Environment: “The circumstances, objects, or conditions by which one is surrounded” (Webster’s). Often used to refer only to natural Ecosystems apart from human settlement. Environment is more accurately understood to include other natural and human-made physical conditions.

Equity: The dictionary defines equity as fairness, freedom from bias, or favoritism. However, one must keep in mind that a fair process can yield unequal results.

Global Forum: The 1992 meeting of non-governmental organizations (NGOs) in Rio de Janeiro, which ran parallel to the meeting of governments at the Earth Summit. NGO participants signed a set of “Citizen Treaties” that went far beyond the agreements made by governments in Agenda 21.

Growth: Increase or expansion. Used in the phrase “economic growth” to mean an expansion in production, jobs, and revenue. Often confused with Development, which does not necessarily include the idea of physical increase in size.

Indicator: A measurement that reflects the status of a system. Examples: the Dow Jones Industrial Average, the number of spotted owls in a forest ecosystem, an oil pressure gauge on an engine.

Linkage: A direct or indirect causal relationship between two or more systems, where changes in one affect the status of the other. Linkages among systems are often reflected in the Indicators that measure the health of those systems.

NEPPS: National Environmental Performance Partnership System. State-Federal partnership system designed to foster identification of state environmental priorities and goals and to allow states to better direct federal resources to address those priorities through the use of environmental indicators as measures of progress in environmental quality. New Jersey was one of the first states in the nation to implement this environmental management system and is currently engaged in its third plan with the US Environmental Protection Agency.

Noncommunity water system: Noncommunity water systems do not serve permanent residents. There are two types of these systems: transient noncommunity systems and nontransient noncommunity systems. A transient noncommunity water system serves at least 25 people per day, but the people are different each day (e.g., highway rest stop, motel). A nontransient noncommunity water system serves at least 25 of the same persons over 6 months a year (i.e., office building, school).

Non-renewable: Finite in quantity. Fossil fuels like gasoline are considered “non-renewable resources” because they exist only in limited amounts and their disappearance is essentially permanent. (See also Resources and Renewable.)

Our Common Future: The report of the Brundtland Commission, which linked economic development to alleviate poverty with environmental protection to prevent ecological catastrophe. The report defined Sustainable Development as that which “meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Particulate matter: Particulate matter is the general term used for a mixture of solid particles and liquid droplets found in the air. These particles originate from many different stationary and mobile sources as well as from natural sources. They range in size from about 0.005 micrometers to 50-100 micrometers in diameter (a human hair is approximately 70 micrometers in diameter). Particles smaller than 10 micrometers (PM10) can be inhaled into the lungs and particles smaller than 2.5 micrometers (PM 2.5) are thought to have the greatest impact on human health.

Per Capita: Latin for “by heads.” A measurement that is presented in terms of units per person, as opposed to a total or aggregate figure.

Renewable: Able to be continually replenished. Rainwater, solar and hydro-electricity, and human creativity are all considered to be Renewable Resources. (See also Resources and Non-renewable.)

Resources: “A source of supply or support; available means” (Webster’s). The energy and materials used to support an Economy and fulfill human needs and desires. (See also Renewable and Nonrenewable).

Riparian: Refers to land adjacent to a river, watercourse, or

body of water.

Society: From a Latin root meaning “companion.” Society in the broadest sense refers to the entirety of a community, the whole web of living relationships among people, their Culture, and their Environment.

Species: A biological classification referring to a group of organisms that share similar traits and genetic codes and that are capable of interbreeding.

Sustainability: “Long-term health and vitality: economic, environmental, and social” (New Jersey Future’s definition). Achieving and maintaining sustainability is the implicit goal of every human society.

Sustainable: Able to endure over time. A sustainable society is one that is just, healthy, vital, resilient, and able to creatively adapt to changing conditions over the long term. (See also Development and *Our Common Future*.)

System: A set of actors or entities bound together by a set of rules and relationships into a unified whole. A system’s health is dependent on the health of the whole pattern, which can sometimes be reflected (and thus measured) in the status of a key part of the system (See Indicator).

Target: A desired level of achievement. In this report, some of the indicator pages include quantitative targets adopted by state agencies through public processes; these are considered ambitious yet achievable performance levels.

Vehicle Miles Traveled (VMT): A unit to measure vehicle travel made by a private vehicle, such as an automobile, van, pickup truck, or motorcycle. Each mile traveled is counted as one vehicle mile regardless of the number of persons in the vehicle.

Watershed: A geographical area whose boundaries are determined by the flows of water following gravity to a principal tributary, river, or body of water. Watersheds may be of many different scales, from relatively small to very large.

Wetlands Loss: In this report, wetlands loss is defined as conversion of wetlands to other land types.

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A technical appendix for the indicators in this report will be available this winter at www.state.nj.us/dep/dsr.

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